

FOR INFORMATION PURPOSES ONLY

[STAMPS]

Utility Model Registration Application

(3) no [illegible] symbols

5 (¥1500)

19 November 1971

Patent Office Commissioner

Mr Takehisa ITSUCHI

10 1. Title of the Design: Extending and contracting pipe

2. Creator of the Design:

Name: Kosaku URANO

Address: c/o Tokyo Electric Co. Ltd., Tokyo Works,  
15 2-6-13 Naka-Meguro, Meguro-ku, Tokyo

3. Utility Model Registration Applicant:

Name: 856 Tokyo Electric Co. Ltd.

(Nationality) Representative: Yoshio KOMAI

20 Address: 2-6-13 Naka-Meguro, Meguro-ku, Tokyo

4. Agent:

Name: 7211 Patent Attorney, Akira KASHIWAKI

Address: Kyodo Building (Shin-Aoyama) 5-9-15 Minami-  
25 Aoyama, Minato-ku, Tokyo 107

Tel.: 409-4535

5. List of Appended Items:

	(1) Specification	1 copy
30	(2) Drawings	1 copy
	(3) Duplicate of Application	1 copy
	(4) Original of Power of Attorney	1 copy

35 The items appended to the utility model registration  
application (1) submitted at the same time this day are  
hereby incorporated by reference.

(3) no [illegible] symbols

### Specification

1. Title of the Design: Extending and contracting pipe

5 2. Scope of the Utility Model Claim

Extending and contracting pipe characterized in that a plurality of pipe bodies which are able to slide freely in the axial direction are fitted together with each other to link up, oblique edges which open out into  
10 external insertion end parts on all the abovementioned pipe bodies are formed and also annular engagement parts are formed in the vicinity of internal insertion end parts, and coupling bodies which comprise, at both ends or at one end at least, engaging single  
15 projections where one part of the abovementioned oblique edges has been cut out on the external insertion end parts of all of the abovementioned pipe bodies, which projections mesh with the abovementioned annular engagement parts and joining parts which join  
20 with the adjacently installed oblique edge parts, are attached so that they are respectively urged in the direction of engagement.

3. Detailed Description of the Design

25 The present design relates to an extending and contracting pipe which is used in extension pipes or the like in electric vacuum cleaners, for example.

There are various types of prior art extending and  
30 contracting pipes in which a plurality of pipe bodies are fitted together to link up with freedom to slide in the axial direction and all the pipe bodies can be joined in a fixed manner when they have been extended. Furthermore, there are also systems among these which  
35 are configured, for purposes of ease of handling, in such a way that the pipe bodies fit together with one another automatically when they have all been extended and thereby maintain the extended state. However, when the pipe is shortened, it is necessary to remove the

stoppers of each engagement part one by one, and this is inevitably unsatisfactory for extending actions and shortening actions in an extending and contracting pipe.

5

The present design aims to produce an extending and contracting pipe with which it is possible to easily shorten a multi-stage pipe body by simply releasing a single coupling body at the time of shortening, and  
10 with which there is improved operability at the time of extending said pipe.

The present design is a system which is characterized in that a plurality of pipe bodies which are able to  
15 slide freely in the axial direction are fitted together with each other to link up, oblique edges which open out into external insertion end parts on all the abovementioned pipe bodies are formed and also annular engagement parts are formed in the vicinity of internal  
20 insertion end parts, and coupling bodies which comprise, at both ends or at one end at least, engaging single projections where one part of the abovementioned oblique edges has been cut out on the external insertion end parts of all of the abovementioned pipe  
25 bodies, which projections mesh with the abovementioned annular engagement parts and joining parts which join with the adjacently installed oblique edge parts, are attached so that they are respectively urged in the direction of engagement. Accordingly, in order to set  
30 the device in its extended state, the engaging single projections of the coupling bodies automatically mesh with each of the annular engagement parts by the pipe bodies simply being pulled out, which produces a locked state, and, in the case of shortening, if each of the  
35 pipe bodies is made shorter by operating the coupling body at one end to release the locked state, the pipe bodies are automatically shortened by simply applying force to the pipe bodies in the axial direction, by virtue of the fact that the joining parts of each of

the coupling bodies are joined at their oblique edges, and the locked state is released in sequence.

One exemplary embodiment of the present design will be described with reference to the drawings. The present exemplary embodiment relates to an extension pipe for an electric vacuum cleaner, and a pipe body (3) acting as a relay pipe is inserted with freedom to slide in the axial direction into a pipe body (2) which comprises a tapered connection part (1) to which a flexible pipe (not shown) is connected, a pipe body (5) which comprises a tapered connection part (4) to which a dust collection port body (not shown) or the like is connected is inserted with freedom to slide in the axial direction into said pipe body (3). Then, an oblique edge (7) which opens out into a cone shape and a stopper edge (8) with an internal diameter which fits the dimensions of the external diameter of the abovementioned pipe body (3) are formed on the external insertion end part (6) of the abovementioned pipe body (2). Furthermore, a stopper edge (10) with an external diameter which fits the dimensions of the internal diameter of the abovementioned pipe body (2) is formed on the internal insertion end part (9) of the abovementioned pipe body (3), and a thin annular engagement part (11) is formed somewhat towards the tip end of said stopper edge (10). A stopper edge (13) with an internal diameter which fits the dimensions of the external diameter of the abovementioned pipe body (5) is formed on an external insertion end part (12) of the abovementioned pipe body (3). In addition, a stopper edge (15) with an external diameter which fits the dimensions of the internal diameter of the abovementioned pipe body (3) is formed on an internal insertion end part (14) of the abovementioned pipe body (5), and a thin annular engagement part (16) is formed somewhat towards the tip end of said stopper edge (10).

Then, a partial cut-out part (17) is formed on the  
abovementioned oblique edge (7) of the abovementioned  
pipe body (2), and also single projections (19) facing  
away from the outer peripheral surface (18) of the  
5 abovementioned pipe body (2) are formed, a coupling  
body (20) is inserted between said single projections  
(19) and the abovementioned cut-out part (17), and the  
central part of said coupling part (20) is rotatably  
attached to the abovementioned single projections (19)  
10 by means of a support shaft (21). An engaging single  
projection (22) which engages with the abovementioned  
annular engagement part (11) and an oblique part (23)  
whose angle approximates that of the abovementioned  
oblique edge (7) are formed towards the tip end of the  
15 abovementioned coupling body (20). Furthermore, bosses  
(24) (25) which respectively face away from the base  
part direction inner surface of the abovementioned  
coupling part (20) and the abovementioned outer  
peripheral surface (18) are provided, a compression  
20 spring (26) is attached to said bosses (24) (25) and  
the abovementioned coupling body (20) is urged in the  
direction of engagement.

Next, single projections (28) facing away from the  
25 outer peripheral surface (27) of the vicinity of the  
external insertion end part (12) of the abovementioned  
pipe body (3) are formed, a coupling body (29) is  
inserted between said single projections (28), and the  
central part thereof is rotatably attached to the  
30 abovementioned single projections (28) by means of a  
support shaft (30). An engaging single projection (31)  
which meshes with the abovementioned annular engagement  
part (16) is formed towards the tip end of the  
abovementioned coupling body (29), and a joining part  
35 (32) which joins to the abovementioned oblique edge (7)  
or the abovementioned oblique part (23) is formed in  
the base part direction. Furthermore, bosses (33) (34)  
which face away from the base part direction inner part  
of the abovementioned coupling body (29) and the

abovementioned outer peripheral surface (27) are formed, a compression spring (35) is attached to said bosses (33) (34) and the abovementioned coupling part (29) is urged in the direction of engagement.

5

In a configuration of this kind, as shown in Figure 3, the normal state is the shortened state, but when the pipe is extended for use, the pipe body (2) and the pipe body (5) are grasped and are each pulled out in  
10 the axial direction. By means of this, the engaging single projections (22) (31) of the coupling bodies (20) (29) mesh with the annular engagement parts (11) (16) when they come into alignment therewith, and the pipe body (2)/pipe body (3) and the pipe body (3)/pipe  
15 body (5) are fixedly coupled, as shown in Figure 2. In this state, the pipes will not shorten even if force is applied in the axial direction. Next, in order, shorten the pipes, as shown in Figure 3, first of all the coupling body 20 is pushed and caused to rotate in the  
20 direction of compression of the compression spring (26), the engaging single projection thereof is moved apart from the annular engagement part (11), and the pipe body (2) and the pipe body (3) are released from the locked state. In this state, the pipe body (3)  
25 enters the pipe body (2) when the pipe body (3) is pushed towards the pipe body (2). Then, lastly, the engaging part (32) of the coupling body (29) joins to the oblique edge (7) or the oblique part (23), the coupling body (29) rotates in the direction of flexure  
30 of the compression spring (35), according to the angle thereof, and said engaging single projection (31) moves out of the annular engagement part (16). By virtue of this, the locked state of the pipe body (3) and the pipe body (5) is released, the pipe body (5) also  
35 enters the pipe body (3), and the assembly is shortened, as shown in Figure 3. Moreover, when this kind of shortening operation is performed, the weight of the pipe bodies (3) (5) acts in the axial direction and they respectively become shorter, as described

above, provided that the assembly is upright with the pipe body (5) on top, while the coupling body (20) is released. Furthermore, when the pipe body (2) is connected to an electric vacuum cleaner, negative  
5 pressure is produced inside and force is generated in the axial direction and the assembly is shortened in the same way as described above by virtue of the fact that the connection port (4) side of the pipe body (5) is closed off and the electric vacuum cleaner is  
10 driven.

In the abovementioned exemplary embodiment, a description has been given of an assembly comprising pipe bodies (2) (3) (5) in three stages, but four or  
15 more stages may also be provided. In this case, the intermediately positioned coupling body comprises an oblique part and an engaging single projection on one side, and a joining part on the other. Furthermore, it is not limited to being used as an extension pipe for  
20 an electric vacuum cleaner.

With the present design as described above in a system in which a plurality of pipe bodies are fitted together with freedom to slide in the axial direction, it is  
25 possible to cause the meshing of the engaging single projection of the coupling body which is attached to the external insertion end part of one of the pipe bodies adjacently installed on the annular engagement part formed on the internal insertion end part of the  
30 other pipe body simply by extending the fitting portions of all of the pipe bodies, and by virtue of this, it is possible to automatically set the assembly in an extended state, and furthermore, in the case of shortening the assembly, the joining part of the  
35 coupling body in the locked state is joined to the adjacently installed oblique edge or oblique part, and it is possible to automatically release the locked state by applying force in the axial direction to the pipe body while operating the coupling body at one end

to release the locked state, and accordingly it is possible to shorten the assembly with a one-touch action, which makes the shortening operation extremely easy to perform.

5

#### 4. Brief Description of the Figures

The figures show one exemplary embodiment of the present design, and Figure 1 is an oblique view, Figure 2 is a longitudinal cross-sectional side view of the extended state, and Figure 3 is a longitudinal cross-sectional side view in the shortened state.

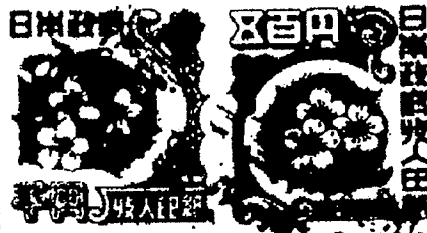
10 2 - 3...pipe body, 5...pipe body, 6...external insertion end part, 7...oblique edge, 9...internal insertion end part, 11...annular engagement part, 12...external insertion end part, 14...internal insertion end part, 16...annular engagement part, 20...coupling body, 22...engaging single projection, 23...oblique part, 29...coupling body, 31...engaging single projection, 32...joining part.

Figure 1

Figure 2

Figure 3





# 実用新案登録願 (3)後記号なし

(1,500円)

昭和 46 年 11 月 19 日

特許庁長官 井 土 武 久 殿

1. 考案の名称 シン伸 ショク縮 カン管
2. 考案者 メグロクナカメグロ  
東京都目黒区中目黒2丁目6番13号  
トウキョウデンキ  
東京電気株式会社東京工場内  
住 所  
氏 名 ウラノ 耕 作
3. 実用新案登録出願人  
住 所 東京都目黒区中目黒2丁目6番13号  
氏 名 556 東京電気株式会社  
(国 籍) 代表者 駒 井 喜 雄
4. 代 理 人 〒 107  
住 所 東京都港区南青山5丁目9番15号  
氏 名 共同ビル(新青山)電話409-4535  
7211 弁理士 柏 木 明
5. 添付書類の目録
 

(1) 明細書	1 通
(2) 図面	1 通
(3) 願書副本	1 通
(4) 委任状の謄本	1 通

本日同時に提出の実用新案登録願(1)に  
添附のものを授用する。

46-108471

48-64016-01

1 考案の名称 伸 縮 管

2 実用新案登録請求の範囲

軸方向に摺動自在の複数本の管体をそれぞれ嵌合させて連設し、前記各管体の外挿端部に拡開する傾斜縁を形成するとともに内挿端部付近に環状係合部を形成し、前記各管体の外挿端部に前記傾斜縁の一部を切欠いて前記環状係合部に噛合う係合突片と隣設の傾斜縁部に接合する接合部とを両端に有するかまたは少なくとも一端に有する連結体をそれぞれ係合方向に付勢して取付けたことを特徴とする伸縮管。

3 考案の詳細な説明

この考案は、たとえば電気掃除機の延長管などに利用される伸縮管に関するものである。

従来、複数本の管体を軸方向に摺動自在に嵌合  
させて連設し、それらを延長させたときに各管体  
を固定的に連結しうるようにした伸縮管は、種々  
の形式のものが存する。また、これらのうち、取  
扱いを容易にする目的で、各管体を延長させたと  
きには自動的にそれぞれに係合して延長状態を維  
持するように構成したものも存する。しかしなが  
ら、縮少する場合には各係合部のストッパを個  
々に解除しなければならないものであり、延長操  
作と縮少操作とを伴う伸縮管としては必ずしも満  
足すべきものではない。

この考案は、延長時の操作性の良好であること  
はもとより、縮少時にも一個の連結体を解除する  
だけで多段の管体を簡単に縮少させうる伸縮管を  
得ることを目的とするものである。

この考案は、軸方向に揺動自在の複数本の管体  
をそれぞれ嵌合させて連結し、前記各管体の外挿  
端部に拡開する傾斜縁を形成するとともに内挿端  
部付近に環状係合部を形成し、前記各管体の外挿  
端部に前記傾斜縁の一部を切欠いて前記環状係合  
部に噛合し係合突片と隣設の傾斜縁に接合する接  
合部とを両端に有するかまたは少なくとも一端に  
有する連結体をそれぞれ係合方向に付勢して取付  
けたことを特徴とするものである。したがって、  
延長状態にセットするためには、各管体を単に引  
き出すことにより連結体の係合突片が環状係合部  
にそれぞれ自動的に噛合つてロック状態とし、縮  
小させる場合には一端の連結体を操作してロック  
状態を解除した上でそれぞれを縮小させれば、各  
連結体の接合部が傾斜縁に接合して順次ロック状

塵が解除されることにより、単に軸方向への力を  
管体を与えるだけで自動的に減少されるものであ  
る。

この考案の一実施例を図面に基づいて説明する。  
本実施例は電気掃除機の延長管に関するもので、  
可撓管（図示せず）が接続されるテーパ状の接続  
部(1)を有する管体(2)に中継管としての管体(3)が軸  
方向に摺動自在に挿入され、この管体(3)に集塵口  
体（図示せず）等が接続されるテーパ状の接続部  
(4)を有する管体(5)が軸方向に摺動自在に挿入され  
ている。そして、前記管体(2)の外挿端部(6)に円錐  
状に拡開する傾斜縁(7)と前記管体(3)の外径寸法に  
適合した内径のストッパー縁(8)とが形成されてい  
る。また、前記管体(3)の内挿端部(9)に前記管体(2)  
の内径寸法に適合した外径のストッパー縁(10)が形

成され、このストッパー線10のやや先端方向に溝  
状の環状係合部11が形成されている。前配管体(3)  
の外挿端部12には、前配管体(5)の外径寸法に適合  
した内径のストッパー線13が形成されている。さ  
らに、前配管体(5)の内挿端部14に、前配管体(3)の  
内径寸法に適合する外径のストッパー線15が形成  
され、このストッパー線10のやや先端方向に溝状  
の環状係合部16が形成されている。

しかして、前配管体(2)の前記傾斜線(7)に部分的  
な切欠部17が形成されるとともに、前配管体(2)の  
外周面18に相対向する突片19が形成され、これら  
の突片19間と前記切欠部17間に連結体20が挿入さ  
れ、この連結体20の中央部は支軸21により前記突  
片19に回動自在に取付けられている。前記連結体  
20の先端方向に、前記環状係合部11に係合する係

合突片(4)と前記傾斜線(7)と近似した角度の傾斜部  
(4)とが形成されている。また、前記連結体(4)の基  
部方向内面と前記外周面(4)とにそれぞれ相対向す  
るボス(4)が設けられ、これらのボス(4)に圧縮  
ばね(4)が取付けられて前記連結体(4)は係合方向に  
付勢されている。

ついで、前記管体(3)の外挿端部(4)付近の外周面  
(4)に相対向する突片(4)が形成され、これらの突片  
(4)間に連結体(4)が挿入されてその中央部は支軸(4)  
により前記突片(4)に回転自在に取付けられている。  
前記連結体(4)の先端方向に前記環状係合部(4)に噛  
合う係合突片(4)が形成され、基部方向に前記傾斜  
線(7)または前記傾斜部(4)に接合する接合部(4)が形  
成されている。また、前記連結体(4)の基部方向内  
部と前記外周面(4)とに相対向するボス(4)が形成

され、これらのボス(3)(4)に圧縮ばね(5)が取付けられ、前記連結体(4)は係合方向に付勢されている。

このような構成において、通常は第3図に示すように縮小状態にあるが、延長して使用する場合には管体(2)と管体(5)とを把持して軸方向にそれぞれを引き出す。これにより、各連結体(4)(4)の係合突片(4)(4)は環状係合部(1)(1)に一致したときそれらと噛合い、管体(2)と管体(3)および管体(3)と管体(5)とを第2図に示すように固定的に連結する。この状態では軸方向に力を与えても伸縮はしない。ついで、第3図に示すように縮小するためには、まず、連結体(4)を押えて圧縮ばね(5)が圧縮される方向に回転させ、その係合突片(4)を環状係合部(1)からはずし、管体(2)と管体(3)とのロック状態を解除する。この状態で管体(3)を管体(2)方向に押し込む



と管体(3)は管体(2)内に入り込む。そして、ついに 1  
は連結体(4)の接合部(6)が傾斜線(7)または傾斜部(4) 2  
に接合し、その角度に応じて連結体(4)は圧縮ばね 3  
(5)を握ませる方向に回転し、その係合突片(3)が環 4  
状係合部(6)から抜け出す。これにより管体(3)と管 5  
体(5)とのロック状態が解除され、管体(5)も管体(3) 6  
内に入り込み、第3図に示すように全体が縮少さ 7  
れる。なお、このような縮少操作を行なう場合、 8  
連結体(4)を解除しつつ管体(5)が上になるよう全体 9  
を立てれば、各管体(3)(5)の自重が軸方向に作用し 10  
て前述のようにそれぞれが縮少される。また、管 11  
体(2)が電気掃除機に接続されている場合には、管 12  
体(5)の接続口(4)側を閉塞して電気掃除機を駆動す 13  
ることにより、内部に負圧が生じて軸方向の力が 14  
発生し、前述の場合と同様に縮少する。 15

前記実施例においては、管体(2)(3)(5)を三段のもの  
のについて説明したが、四段以上の複数段にしてもよい。  
この場合、中間に位置する連結体は、傾  
斜部と係合突片とを一方に有し、接合部を他方に  
有するものにする。また、その用途も電気掃除機  
の延長管に限られるものではない。

この考案は上述のように、軸方向に摺動自在の  
複数本の管体を連設したものにおいて、各管体の  
嵌合部分を単に延長させるだけで管体の内挿端部  
に形成された環状係合部に隣設する他の管体の外  
挿端部に取付けられた連結体の係合突片を噛合わ  
せることができ、これにより自動的に延長状態に  
セットすることができ、また、縮少させる場合に  
は一端の連結体を操作してロック状態を解除させ  
つつ管体に軸方向の力を与えるだけで、ロック状

腹にある連結体の接合部が隣設の傾斜縁または傾  
斜部に接合して自動的にロック状態を解消させる  
ことができ、したがって、ワンタッチ動作で縮少  
させることができ、伸縮操作をきわめて容易に行  
なうことができるものである。

#### 4. 図面の簡単な説明

図面はこの考案の一実施例を示すもので、第 1  
図は斜視図、第 2 図は延長状態の縦断側面図、第  
3 図は縮少状態の縦断側面図である。

2 ～ 3 … 管体、5 … 管体、6 … 外挿端部、7 …  
傾斜縁、9 … 内挿端部、11 … 環状係合部、12 … 外  
挿端部、14 … 内挿端部、16 … 環状係合部、20 … 連  
結体、22 … 係合突片、23 … 傾斜部、29 … 連結体、  
31 … 係合突片、32 … 接合部

